Porcine neural progenitor cells derived from tissue at different gestational ages can be distinguished by global transcriptome.

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Public Summary:
The impact of gestational age on mammalian neural progenitor cells is potentially important for both an understanding of neural development and the selection of donor cells for novel cellbased treatment strategies. In terms of the latter, it can be problematic to rely entirely on rodent models in which the gestational period is significantly shorter and the brain much smaller than is the case in humans. Here we analyzed pig brain progenitor cells (pBPCs) harvested at two different gestational ages (E45 and E60) using gene expression profiles, obtained by microarray analysis and qPCR, across time in culture. Comparison of the global transcriptome of pBPCs from age-matched transgenic GFP-expressing fetuses versus non-GFP expressing fetuses did not reveal significant differences between the two cell types, whereas comparison between E45 and E60 pBPCs did show separation between the data sets by principle component analysis. Further examination by qPCR showed evidence of relative down-regulation of proliferation markers and up-regulation of glial markers in the gestationally older (E60) cells. Additional comparisons were made. This study provides evidence of age-related changes in the gene expression of cultured fetal porcine neural progenitors that are potentially relevant to the role of these cells during development and as donor cells for transplantation studies.

Scientific Abstract:
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